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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/622,630	07/18/2003	Yanyun Chen	M61.12-0536	2658

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EXAMINER	
PRENDERGAST, ROBERTA D	
ART UNIT	**PAPER NUMBER**
2671	

DATE MAILED: 01/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/622,630	CHEN ET AL.	
	Examiner	Art Unit	
	Roberta Prendergast	2671	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 October 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

Examiner acknowledges the amendment to the drawings dated 10/5/2005 and therefore the objection to the drawings is hereby withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3, 5, 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bruderlin et al. U.S. Patent Application No. 2003/0179203 in view of Chang, J. T. et al., "A practical model for hair mutual interactions", Proc. of 2002 ACM Siggraph/Eurographics Symposium on Computer Animation, ACM Press, New York, NY, pages 73-80.

Referring to claim 1, Bruderlin et al. teaches, a computer implemented method for placing feathers on a surface comprising establishing a plurality of vertices on a surface (page 1, paragraph [0010]; page 4, paragraph [0054] page 5, paragraph [0061]; page 7, paragraph [0083], [0086]-[0088]), establishing a growing direction for each of the plurality vertices on the surface (page 1, paragraph [0011]; page 6, paragraph [0073]; page 7, paragraph [0081], [0087],

and [0092]), placing feathers on the surface based on the plurality of vertices and the growing direction (Figs. 8(A-B), 12; page 1, paragraph [0010]), detecting collisions between adjacent feathers; and adjusting the growing direction such that the feathers do not collide (Figs. 2(element 258), 10; page 6, paragraph [0072]; page 12, paragraph [0137]), and receiving a shape of each feather (Fig. 18, 21, and 22; page 5, paragraphs [0064]-[0066]; page 10, paragraphs [0113]-[0114]; page 11, paragraph [0126]) but does not specifically teach automatically detecting collisions between adjacent feathers based on the shape of each feather, and automatically adjusting the respective growing directions of the feathers such that the respective shape of each feather does not collide with the shape of an adjacent feather.

Chang et al. teaches automatically detecting collisions between adjacent feathers based on the shape of each feather (page 76, section 4.2 Dynamic Interactions, 1st and 3rd paragraphs, i.e. the guide hairs surrounded by two generalized cylinders are understood to be the rachis surrounded by the left vane and right vane), and automatically adjusting the respective growing directions of the feathers such that the respective shape of each feather does not collide with the shape of an adjacent feather (page 76, section 4.2 Dynamic Interactions, 3rd and 4th paragraphs, i.e. it is understood that the use of a spring force and friction force to push the pair of feathers away from each other is understood to be adjusting the angle of the growing direction as the tangential vector of the hair/feather at the penetrating vertex on the surface is utilized to scale the original spring force).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Bruderlin et al. to include automatically detecting collisions between adjacent feathers based on the shape of each feather, and automatically adjusting the respective growing directions of the feathers such that the respective shape of each feather does not collide with the shape of an adjacent feather thereby allowing Bruderlin et al. to not only prevent object-to-surface interpenetration but to also prevent feather-to-feather interpenetration thereby creating a realistic feather model using an effective collision detection strategy (page 78, section 7.2 Dynamic Collision).

Referring to claim 2, Bruderlin et al. teaches, the method of claim 1 wherein placing further comprises placing key feathers at selected vertices and interpolating to place other feathers on the surface between the selected vertices (page 1, paragraph [0010], lines10-14; page 5, paragraph [0069]; page 6, paragraph [0075]; page 8, paragraph [0098]).

Referring to claim 3, Bruderlin et al. teaches, the method of claim 1 wherein placing further comprises recursively placing the feathers on the surface based on the growing direction (page 7, paragraph [0083]).

Referring to claim 5, Bruderlin et al. teaches, the method of claim 1 wherein the plurality of vertices form similarly shaped polygons and wherein establishing includes evenly distributing the plurality of vertices over the surface (page 4-5, paragraph [0060]-[0061]; page 5, paragraph [0070]).

Referring to claim 10, claim 10 recites the elements of claims 1 and 3 and therefore the rationale for the rejection of claims 1 and 3 apply.

Referring to claim 12, claim 12 recites the elements of claims 10 and 5 and therefore the rationale for the rejection of claims 10 and 5 apply.

Claims 4 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bruderlin et al. U.S. Patent Application No. 2003/0179203 in view of Chang, J. T. et al., "A practical model for hair mutual interactions", Proc. of 2002 ACM Siggraph/Eurographics Symposium on Computer Animation, ACM Press, New York, NY, pages 73-80 as applied to claims 1 and 10 above, and further in view of Franco et al., "Modeling the structure of feathers", In Proceedings of SIGGRAPH 200I-XIV Brazilian Symposium on Computer Graphics and Image Processing. p. 381, Oct. 2001.

Referring to claim 4, Bruderlin et al. teaches, the method of claim 1 wherein the shape is defined by a rachis, a left vane, and a right vane (Figs. 2(element 258), 10; page 6, paragraph [0072]; page 12, paragraph [0137]) but does not specifically teach wherein the shape is defined by a rachis, a left curve, and a right curve.

Franco et al. teaches wherein the shape of a feather is defined by a rachis, a left curve, and a right curve (section 2 The Proposed Model).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Bruderlin et al. to include wherein the shape of a feather is defined by a rachis, a left curve, and a right curve thereby providing a parametric model based on Bezier Curves that

allows easy generation of many feather structures through manipulation of the parameters (Abstract).

Referring to claim 11, claim 11 recites the elements of claims 10 and 4 and therefore the rationale for the rejection of claims 10 and 4 apply.

Claims 6-8 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bruderlin et al. U.S. Patent Application No. 2003/0179203 in view of Chang, J. T. et al., "A practical model for hair mutual interactions", Proc. of 2002 ACM Siggraph/Eurographics Symposium on Computer Animation, ACM Press, New York, NY, pages 73-80 as applied to claims 1 and 10 above, and further in view of Lapperièrre U.S. Patent No. 5912675.

Referring to claim 6, Bruderlin et al. teaches, the method of claim 1 wherein a model of a bird may be made up of multiple triangulated surface skin patches (page 4, paragraph [0057]-[0059]) and further teaches wherein the patches are generated with different densities based on different regions of the model (pages 4-5, paragraph [0060]; page 8, paragraph [0097]; page 9, paragraph [0104]) but does not specifically teach wherein establishing includes establishing vertices over a body of a bird.

Lapperièrre teaches wherein establishing includes establishing vertices over a body (column 2, lines 1-23; columns 4-5, lines 18-9; column 6, lines 8-48; columns 6-7, lines 65-21; column 12, lines 47-65, i.e. it is understood that an articulated skeleton of a bird is comprised of a head portion, a torso portion

representing the body, two limb portions representing the wings, two limb portions representing the legs and a limb portion representing the tail).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method as recited in claim 1 to include wherein establishing includes establishing vertices over a body of a bird thereby allowing the movement of the body feathers to be bound to the movement of the body of a bird thereby generating a more realistic limb model while reducing the amount of effort required by the artist (column 2, lines 5-38; column 3, lines 25-38; columns 6-7, lines 65-21) and further providing a method of assigning the vertices of an envelope to a skeleton which is flexible, versatile and which can reduce the incorrect or undesired assignment of vertices to skeleton elements (column 3, lines 34-38).

Referring to claim 7, Bruderlin et al. teaches, the method of claim 1 wherein feathers are placed on the wing via region maps (page 9, paragraph [0104]; page 10, paragraph [0113]) but does not specifically teach wherein establishing includes establishing vertices over a wing skeleton.

Lapperièrre teaches wherein establishing includes establishing vertices over a limb skeleton (column 2, lines 1-23; columns 4-5, lines 18-9; column 6, lines 8-48; columns 6-7, lines 65-21; column 12, lines 47-65).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method as recited in claim 1 to include wherein establishing includes establishing vertices over a wing skeleton thereby allowing the movement of the wing feathers to be bound to the

movement of the skeleton of the bird thereby bird thereby generating a more realistic limb model while reducing the amount of effort required by the artist (column 2, lines 5-38; column 3, lines 25-38; columns 6-7, lines 65-21) and further providing a method of assigning the vertices of an envelope to a skeleton which is flexible, versatile and which can reduce the incorrect or undesired assignment of vertices to skeleton elements (column 3, lines 34-38).

Referring to claim 8, Bruderlin et al. teaches, the method of claim 1 but does not specifically teach wherein establishing includes establishing vertices over a tail skeleton.

Lapperièrre teaches wherein establishing includes establishing vertices over a limb skeleton (column 2, lines 1-23; columns 4-5, lines 18-9; column 6, lines 8-48; columns 6-7, lines 48-21; column 12, lines 47-65).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method as recited in claim 1 to include wherein establishing includes establishing vertices over a tail skeleton thereby bird thereby generating a more realistic limb model while reducing the amount of effort required by the artist (column 2, lines 5-38; column 3, lines 25-38; columns 6-7, lines 65-21) and further providing a method of assigning the vertices of an envelope to a skeleton which is flexible, versatile and which can reduce the incorrect or undesired assignment of vertices to skeleton elements (column 3, lines 34-38).

Referring to claim 13, claim 13 recites the elements of claims 10 and 6 and therefore the rationale for the rejection of claims 10 and 6 apply.

Referring to claim 14, claim 14 recites the elements of claims 10 and 7 and therefore the rationale for the rejection of claims 10 and 7 apply.

Referring to claim 15, claim 15 recites the elements of claims 10 and 8 and therefore the rationale for the rejection of claims 10 and 8 apply.

Claims 9 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bruderlin et al. U.S. Patent Application No. 2003/0179203 in view of Chang, J. T. et al., "A practical model for hair mutual interactions", Proc. of 2002 ACM Siggraph/Eurographics Symposium on Computer Animation, ACM Press, New York, NY, pages 73-80 as applied to claims 1 and 10 above, and further in view of Greg Turk, "Re-tiling polygonal surface", Computer Graphics (Proceedings of SIGGRAPH 92), 26(2) pages 55-64, July 1992.

Referring to claim 9, Bruderlin et al. teaches, the method of claim 1 but does not specifically teach re-tiling the surface so the vertices are evenly distributed.

Turk teaches re-tiling the surface so the vertices are evenly distributed (Sections 3.2 Positioning Vertices by Point Repulsion and 4 Re-Tiling by Mutual Tesselation, pages 57-58).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method as recited in claim 1 to include re-tiling the surface so the vertices are evenly distributed thereby faithfully representing the surface geometry, the location, and curvature of the re-

tiled surface and for faithfully representing the surface's topology (Section 3.2 Positioning Vertices by Point Repulsion, 1st paragraph, page 57).

Referring to claim 16, claim 16 recites the elements of claims 10 and 9 and therefore the rationale for the rejection of claims 10 and 9 apply.

Response to Arguments

Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberta Prendergast whose telephone number is (571) 272-7647. The examiner can normally be reached on M-F 7:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on (571) 272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RP

ULKA CHAUHAN
SUPERVISORY PATENT EXAMINER